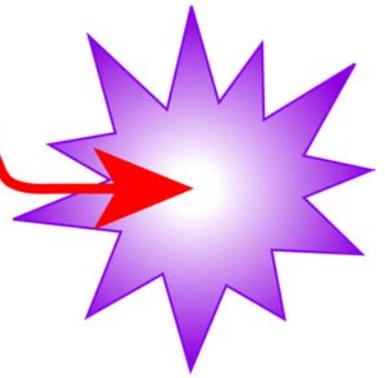


Workshop for Users of the Proposed Argonne Linear Free-Electron Laser Facility (ALFF)



October 30-31, 2003

Argonne National Laboratory, Argonne, Illinois U.S.A.

The goals of this workshop are to:

- Allow current and potential users of the ALFF to meet
- Develop a scientific case for the proposed facility
- Discuss technical challenges and solutions for performing experiments at ALFF

Workshop Chair: Jerry Moore ANL

Working Groups and Chairs:

Cosmochemistry

Robert Clayton The University of Chicago

Materials Science

Andreas Wucher University of Duisburg-Essen, Germany

Atomic and Chemical Physics

Cheuk Ng University of California at Davis

Biology and Soft Materials

Luke Hanley University of Illinois at Chicago

Speakers:

Don Burnett California Institute of Technology
Robert Gordon University of Illinois, Chicago
Bruce King University of Newcastle, Australia
Nicholas Lockyer University of Manchester, England
Stephen Milton Argonne National Laboratory
Margaret Murnane University of Colorado, Boulder

Local Organizing Committee:

Kwang-Je Kim ANL and UofC (chair)
John Lewellen ANL
Stephen Milton ANL
Dennis Mills ANL

Elizabeth Moog ANL
Jerry Moore ANL
Michael Pellin ANL
Catherine Eyberger ANL

Background

Recent developments in high-gain free-electron lasers (FELs) have demonstrated their ability to produce high peak brightness along with continuous tunability in the vacuum-ultraviolet spectral range. This spectral range coincides with the first ionization energies of many molecules and elements and the corresponding high cross sections. Important applications of this light exist in a number of scientific fields including:

- Trace isotopes in cosmochemistry
- Soft ionization of clusters and large molecules
- Coherent control of photodissociation
- Multiphoton photoemission and other nonlinear phenomena
- Surface modification
- High-field interactions: dressed atoms

Pursuing state-of-the-art experiments on these topics requires a high peak brightness light source to overcome signal-to-noise considerations or to achieve a minimal threshold effect. The recently developed high-gain FEL at Argonne, based on the Advanced Photon Source injector and 20-m undulator chain, provides this source, along with an experimental laboratory and a novel high efficiency mass spectrometer. The current capabilities of the FEL include 100- μ J pulse energy, 300-fs pulse duration, and tunability from 120-600 nm. A proposed enhancement of the facility, named ALFF, with a spectral range of 55-444 nm, would improve the performance and delivered beam time and would expand the experimental station, allowing for multiple instruments and improved access for users. Essentially, the working prototype facility will be converted to a fully functional facility offering free user access, with beam time allocated under a competitive proposal arrangement.

This unique facility is available now for users to carry out experiments and push the frontiers of science forward. The time has come to establish priorities for the future of this facility through input from a broad user community.

Information

This Workshop for Users of the Proposed Argonne Linear Free-Electron Laser Facility (ALFF) will offer invited and contributed talks on the ALFF capabilities and proposed science as well as working groups in Cosmochemistry, Materials Science, Atomic and Chemical Physics, and Biology and Soft Materials.

Further information is available on the ALFF Workshop home page. Questions should be e-mailed to

ALFFworkshop@aps.anl.gov

Abstracts

To submit a brief abstract for a contributed talk in one of the working groups, click on the "Abstract Submission Information" link on the ALFF Workshop home page to find templates and abstract submission instructions. **The deadline for submitting abstracts is October 10, 2003.** Abstracts will be available on the ALFF Workshop home page, and printed copies will be distributed to attendees at registration.

Program

The program is posted on the ALFF Workshop home page.

Registration

There is no registration fee for the workshop, but all attendees must complete a registration form. Registration includes attendance at all workshop sessions, coffee breaks, and workshop proceedings. A registration form is available on the ALFF Workshop home page. In addition to this form, each non-U.S. citizen attending the conference (and non-U.S. citizen spouses staying at the Argonne Guest House or planning to come on the Argonne site) must complete a Citizenship Information Form (accessed from the ALFF Workshop home page). **The deadline for submitting both of these forms is October 10, 2003.** Workshop attendees and guests are urged to attend the workshop dinner at the Argonne Guest House; you can sign up for dinner tickets on the registration form. Tickets are \$41.00 each (U.S.\$).

Proceedings

All materials for the workshop proceedings (e.g., presentations, working group summaries) must be submitted electronically as MS Word, MS PowerPoint, postscript, or PDF files. No hand-written or paper copies will be accepted. Your cooperation is appreciated. Proceedings will be distributed to attendees on CD-ROM.